

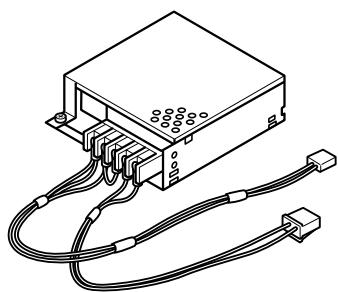
# SERVICE MANUAL

MODEL

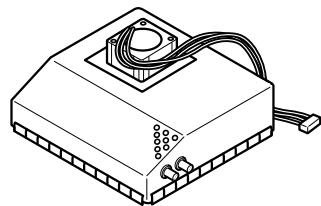
**BKM-301HD**

DEST.

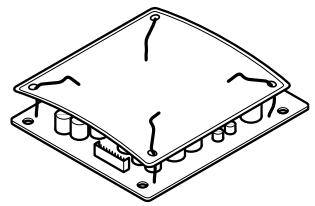
**US/CND**



POWER BLOCK



B BLOCK



GC BOARD

HD SDI INPUT ADAPTOR

**SONY®**

## **WARNING**

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

### **WARNING!!**

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.  
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

### **SAFETY-RELATED COMPONENT WARNING !!**

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

### **ATTENTION!!**

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

### **ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!**

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MAPQUE ! SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES CONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDICUIT DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.

## **SAFETY CHECK-OUT**

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.



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3-861-132-03 (1)

## ***HD SDI Input Adaptor***

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Operating Instructions Page 10

**EN**

### **SECTION 1 OPERATING INSTRUCTIONS**

This section is extracted from  
operation manual.

Monitors Available

PHM-20M8U/14M8U

**BKM-301HD**

© 1997 by Sony Corporation

English

**For the customers in the USA**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

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EN  
Englsih

## Overview

The HD SDI Input Adaptor BKM-301HD is an optional board that provides the HD SDI signal input<sup>1)</sup> (one line) for Sony HD Trinitron Color Monitors, the PHM-20M8U and the PHM-14M8U.

## Precautions

### On magnetism

Do not place the monitor near any devices that emit magnetism (magnets, speakers, electric clocks, toys using magnets, health instruments, etc.). Magnetism will cause picture bounce, oscillations or picture discoloration.

### Operating and storage locations

Avoid operating or storing the monitor under the following conditions:

- Extremely hot or cold places
- Humid or dusty places
- Locations exposed to rain
- Locations subject to strong vibration
- Near a TV or radio station that radiates high-powered radio frequencies

### Others

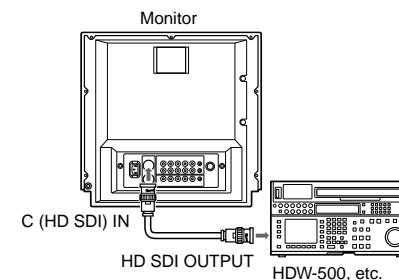
- Do not apply excessive force to the board.
- Wear an anti-static wristband when touching the board.

If the board is malfunctioning or causing errors, consult your nearest Sony dealer.

1) The MONITOR OUTPUT signals do not satisfy the ON-LINE signal specifications.

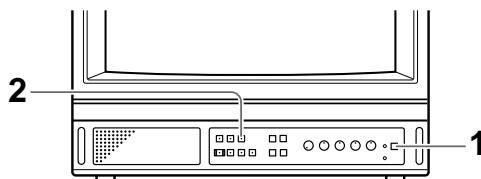
## Connections

Connect the monitor and the digital VTR as follows.

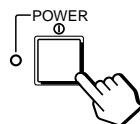


## Operation

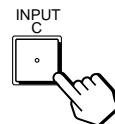
Follow the instructions below.



- 1 Press the POWER switch on the monitor.  
The power indicator (green) is turned on.



- 2 Press the INPUT C button to switch the input.  
The indicator (orange) is turned on and the HD SDI signal  
is input.



## Specifications

### Input/Output

HD SDI IN: BNC×1  
Serial digital (1.485 Gbps)  
Conform to SMPTE 292M, BTA-S004A

MONITOR OUT: BNC×1  
\*The MONITOR OUT signals do not  
satisfy the ON-LINE signal  
specifications.

Quantization: 10 bits/sampling  
Frequency response: Y: 24 MHz ± 3dB  
Pb/Pr: 12 MHz ± 3dB

Design and specifications are subject to change without notice.



3-861-133-02 (1)

## ***HD SDI Input Adaptor***

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Installation Manual for Dealers Page 13 EN

**Warning!** This manual is intended for dealers.

Leave installation of the BKM-301HD to your authorized Sony dealer. The monitor has many components inside that have extremely high voltage. Touching these may lead to injury. **Do not install this input adaptor by yourself.**

Authorized dealers must read this manual carefully before installing the input adaptor.

Monitors Available

PHM-20M8U/14M8U

**BKM-301HD**

© 1997 by Sony Corporation

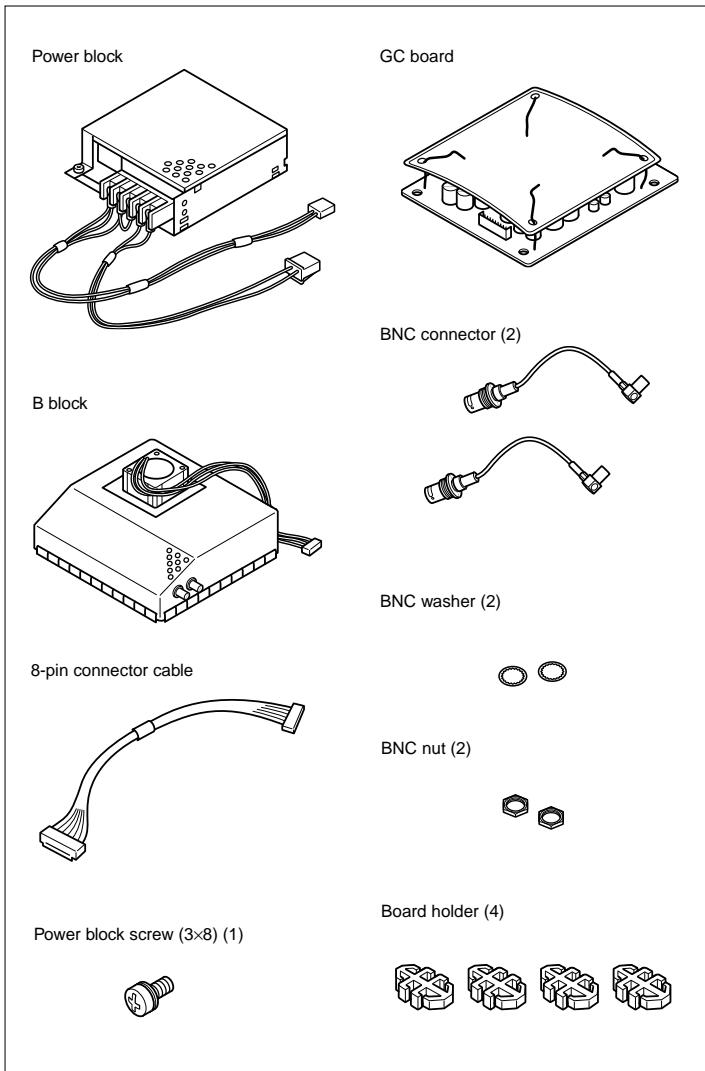
English

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## Components



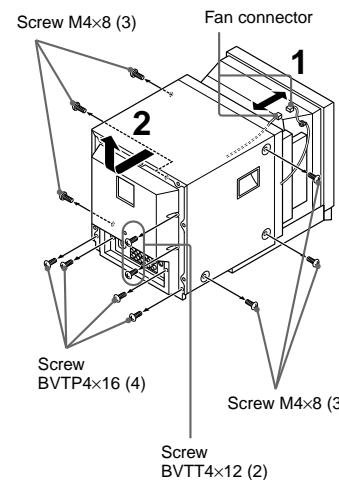
## Installing the Input Adaptor

Install the input adaptor in the following order:

- ① Power block
- ② GC board
- ③ B block

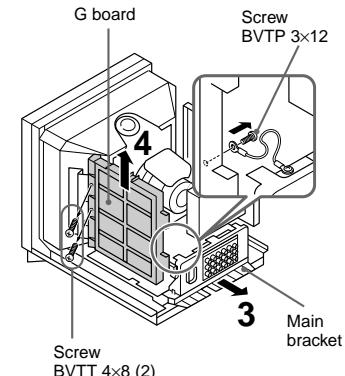
### Before Installing the Input Adaptor

- 1 Remove the 12 screws that lock the rear cover of the monitor. Remove the fan connector on the rear cover.
- 2 Slide the rear cover back, then lift and remove it.

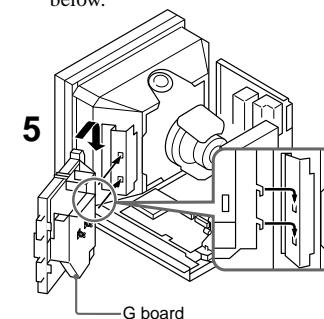


- 3 Pull the main bracket forward a little. Remove the screws on the G board and remove the cable between the terminal board and the G board. (PHM-20M8U)

- 4 Remove the screws on the G board and remove the G board.



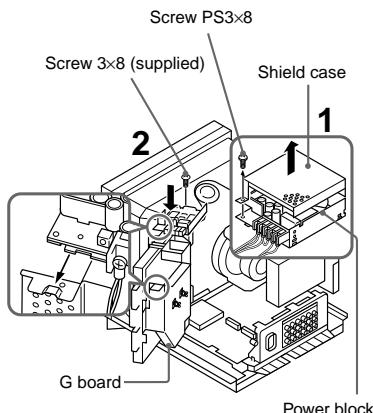
- 5 Install the G board as figure below.



## Installing the Input Adaptor

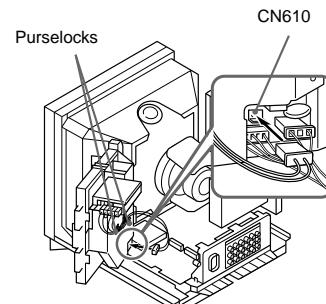
### Installing the Power Block

- 1** Remove the screw (PS3×8) to remove the power block shield case.
- 2** Hook the power block (the shield case has been removed) on the G board shield case (see figure). Lock the power block with the screw (3×8) (supplied).



**3** Install the power block shield case removed in Step 1. Lock the case with the screw.

**4** Lock the power block cables (black/white and black/red) with the two purselocks (see figure). Connect the cable (black/white) to the CN610 connector on the G board.

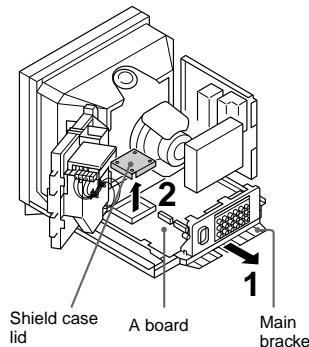


### Installing the GC board

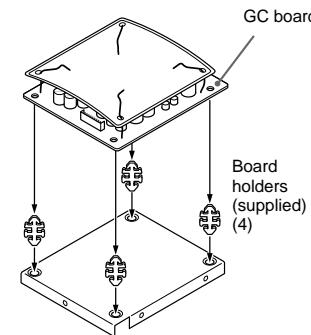
#### Note

Install the GC board after you have installed the power block.

- 1** Slide and pull out the main bracket.
- 2** Lift and remove the shield case lid (left-front of the A board).



**3** Insert the board holders (supplied) into the four holes in the shield case. Match the board holders and the holes of the GC board, insert the GC board into the holes.

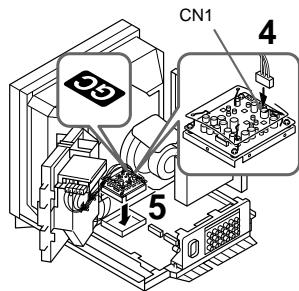


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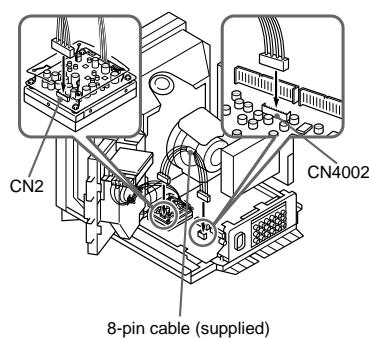
## Installing the Input Adaptor

**4** Insert the cable (black/red) from the power block to the CN1 connector on the GC board.

**5** Install the shield case so that the direction of the GC board is the same as in the figure.



**6** Connect the CN2 connector on the GC board and the CN4002 connector on the A board with the 8-pin cable (supplied).



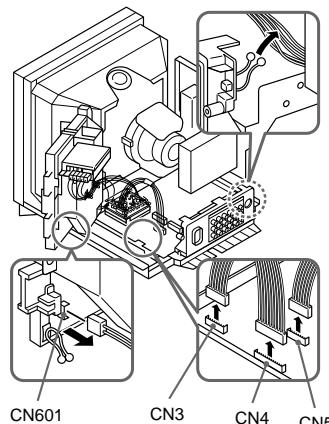
### Installing the B block

#### Note

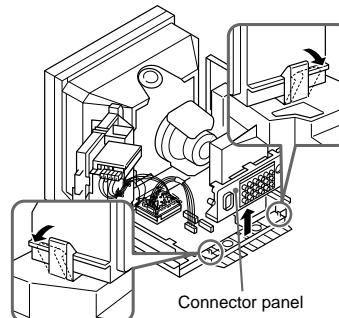
Install the B block after you have installed the power block and the GC board.

**1** Remove the following cables:

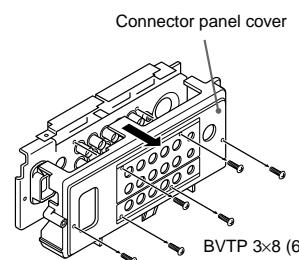
- Cable that has been locked by the purselock on the right side of the connector panel.
- Cables that connected to 4 connectors (CN3, CN4, CN5 and CN601).



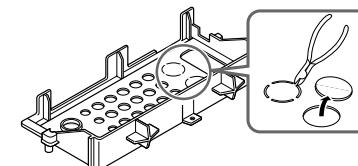
**2** Remove the pawls that lock the connector panel. Remove the connector panel from the main bracket.



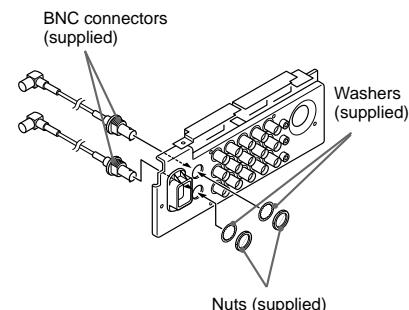
**3** Remove the 6 screws from the connector panel. Remove the connector panel cover.



**4** From the back of the connector panel cover, create two holes. These holes are for installing the BNC connectors. (Use pinch pliers as needed.)



**5** From the back of the connector board, insert the two BNC connectors (supplied) through the two holes. From the front of the connector board, insert the washers. Lock the connectors with the nuts.



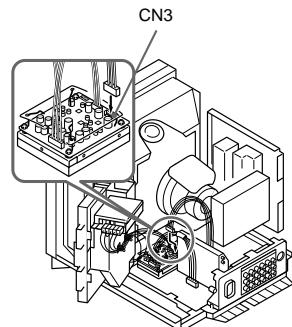
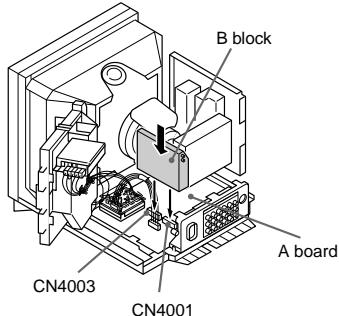
**6** Use the screws to install the connector panel cover on the connector board.

**7** Insert the connector panel in the main bracket. Reconnect the cables that were disconnected in Step 1.

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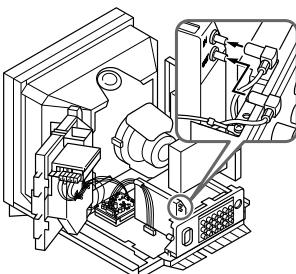
## Installing the Input Adaptor

**8** Adjust the main bracket position. Insert the B block in the CN4001 and the CN4003 on the A board.



**After Installing the Input Adaptor**

**9** Connect the IN/MONITOR OUT plug (BNC connector installed in Step 5) to the IN/OUT (B block connector).



**10** Connect the cable (red/yellow/black) from the B block fan to the CN 3 connector on the GC board.

**Note**

You cannot turn on the power unless you connect the fan connector.

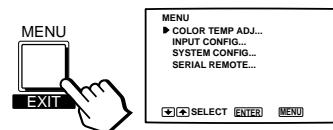
**Note**

Reinstall the components and cables just as they were before installation was begun.

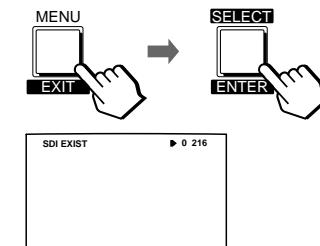
## Rewriting the Service Mode Status

You need to rewrite the service mode status so that the input adaptor can accept HD SDI signals. The following shows how to do this.

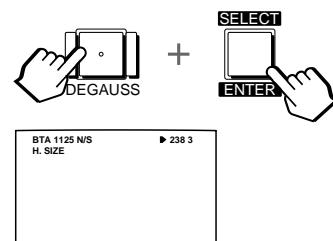
**1** Press the MENU/EXIT button on the monitor.  
The main menu appears.



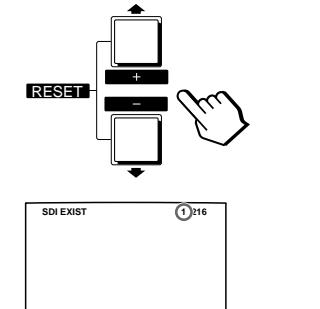
**3** Press the MENU/EXIT and ENTER/SELECT buttons as needed to display "SDI EXIST 0 216" on the screen.



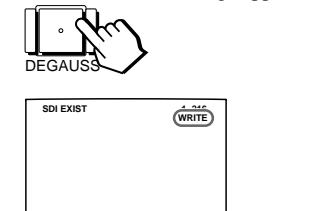
**2** To go to the service mode, press the DEGAUSS and ENTER/SELECT buttons at the same time. The service mode status menu appears.



**4** Using the +/↑ button, change "0" to "1" in "SDI EXIST 0 216".



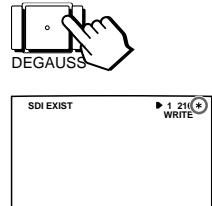
**5** Press the DEGAUSS button. The "WRITE" message appears.



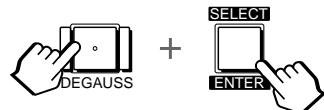
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## Rewriting the Service Mode Status

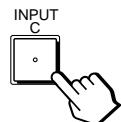
**6** Press the DEGAUSS button again while “WRITE” is displayed. The “\*” appears momentarily, then disappears. If the setting has been properly completed, “▶” appears to the left of “1.” This indicates that the service mode status has been rewritten.



**7** Press the DEGAUSS and ENTER/SELECT buttons at the same time. This terminates the service mode.



**8** Press the INPUT C switch. Make sure the indicator (orange) has been turned on. You can input the HD SDI signals.





## SECTION 2

### CIRCUIT ADJUSTMENTS

The BKM-301HD is an optional board of the PHM-14M8U/20M8U and therefore cannot operate by itself. Consequently when performing measurements and adjustments, mount it to the PHM series monitor. Use a monitor which satisfies the given specifications.

The following describes circuit adjustments which must be performed after repairs and maintenance of the BKM-301HD.

B board (Y gain adjustment)

B board (PB gain adjustment)

B board (PR gain adjustment)

#### **2-1. PREPARATIONS**

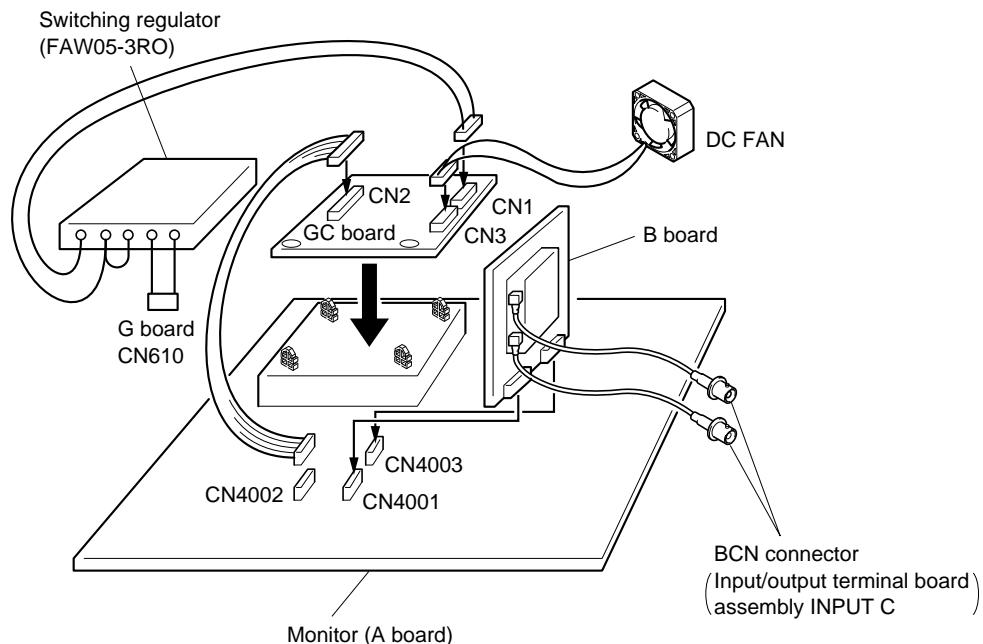
##### **1. Equipment Used**

Name	Specifications	Equipment
Oscilloscope	Frequency: Above DC to 150 MHx Above 2 phenomena (ADD mode)	TEKTRONIX 2445A or equivalent
HD SDI signal generator	1080 specifications	Shibasoku TG15B6 or equivalent
Monitor	HD color monitor	SONY PHM-20M8U PHM-14M8U

##### **2. Tools**

Name	Parts No.	Remarks
1m BNC cable	—	
Adjusting screwdriver	—	

##### **3. Connection**



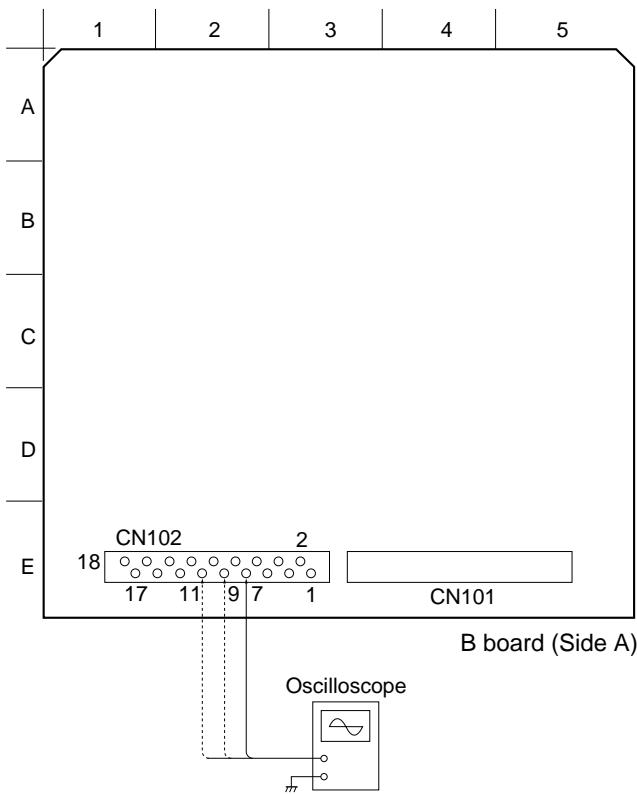
## 2-2. B BOARD ADJUSTMENTS

Use the following tools for adjustments performed when the parts in the B board have been replaced.

### Equipment Used

HD SDI signal generator: TG15B6  
Monitor: PHM-20M8U (Or PHM-14M8U)  
Oscilloscope  
1 m BNC cable  
Adjusting screwdriver

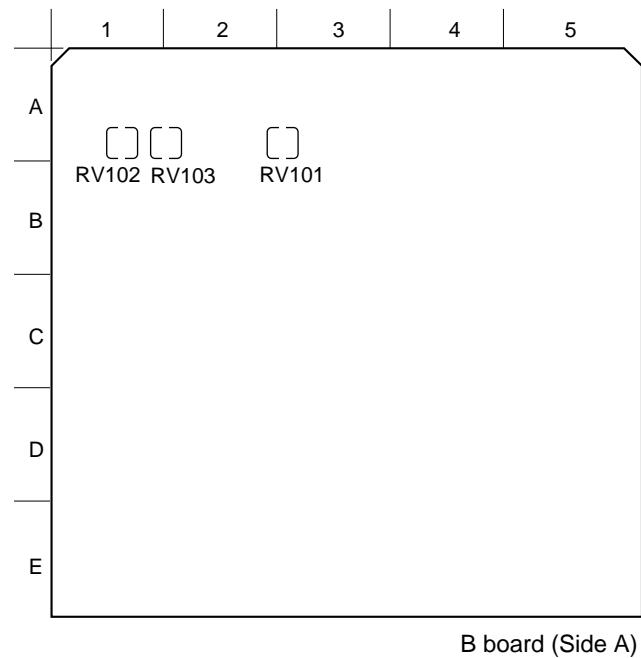
### Connection



### Switch, Control Settings

Monitor control panel  
INPUT C (HD SDI) ..... ON  
APERTURE ..... MIN  
BRIGHT ..... 50% (Center click)  
CHROMA ..... 50% (Center click)  
CONTRAST ..... 80% (Center click)

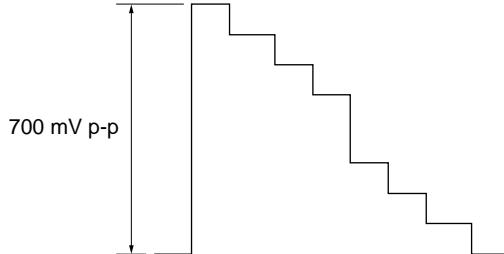
### Adjusting Point



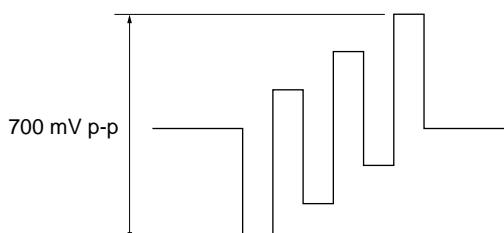
B board (Side A)

## Adjusting Procedure

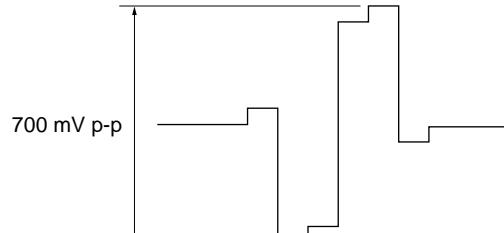
### 1. Y Gain Adjustment

State during Adjustment	Specification	Adjusting Point
<ul style="list-style-type: none"> <li>Input the HD SDI color bar (100% color bar) signal into the INPUT C (HD SDI) input terminal.</li> <li>Connect the oscilloscope to pin ⑦ of CN102 (Y SDI).</li> </ul>	<ul style="list-style-type: none"> <li>Output level of pin ⑦ of CN102 (Y SDI): <math>700 \pm 10 \text{ mV p-p}</math></li> </ul> 	• RV101 (A-3) B Board

### 2. Pb Gain Board

State during Adjustment	Specification	Adjusting Point
<ul style="list-style-type: none"> <li>Input the HD SDI color bar (100% color bar) signal into the INPUT C (HD SDI) input terminal.</li> <li>Connect the oscilloscope to pin ⑨ of CN102 (PB SDI).</li> </ul>	<ul style="list-style-type: none"> <li>Output level of pin ⑨ of CN102 (PB SDI): <math>700 \pm 10 \text{ mV p-p}</math></li> </ul> 	• RV103 (A-1) B Board

### 3. Pr Gain Board

State during Adjustment	Specification	Adjusting Point
<ul style="list-style-type: none"> <li>Input the HD SDI color bar (100% color bar) signal into the INPUT C (HD SDI) input terminal.</li> <li>Connect the oscilloscope to pin ⑪ of CN102 (PR SDI).</li> </ul>	<ul style="list-style-type: none"> <li>Output level of pin ⑪ of CN102 (PR SDI): <math>700 \pm 10 \text{ mV p-p}</math></li> </ul> 	• RV102 (A-1) B Board



## SECTION 3

### CIRCUIT DESCRIPTIONS

The BKM-301HD is composed of three blocks-power supply block, GC board, and B board.

The HD SDI serial signal from the BNC terminal connected to the back of the unit (PHM-14M8U/20M8U) is input to the module (HK-102) of the B board.

It is then converted to the parallel signal at the module, D/A converted in the B board to become the Y, Pb, and Pr signals. These signals are then input to the A board of the unit.

The power supply block generates 5 V from the AC input supplied from the G board of the unit.

The GC board generates 3.3 V, 1.2 V, -2 V, and -5 V from 5 V and supplies them to the module of the B board.

#### 1. POWER SUPPLY BLOCK

AC voltage is supplied by connecting the N and L terminals of the terminal table to the connector (CN610) of the G board of the unit. When the AC voltage is supplied, the green LED (CR52) lights up.

5 V voltage is output between the + and - terminals of the terminal table by switching control.

This voltage is supplied to the connector (CN1) of the GC board.

#### 2. GC BOARD

The circuit is divided into the circuits outputting 3.3 V and -5 V, and 1.2 V and -2 V. This is controlled by IC2 and IC3. IC2 and IC3 are switching regulator control ICs with the same 2-circuit input. The oscillation frequency is determined by the capacitor connected to Pin 1 and the resistor connected to pin ②.

The voltage obtained by resistance-dividing the 2.4 V reference voltage generated by IC1 is supplied to pins ④ and ⑯ of IC2 and IC3. This voltage is compared with the respective output voltages 3.3 V, 1.2 V, -2.0 V, -5 V, and the output voltages are stabilized by pulse width control.

The square wave output from pins ⑦ and ⑩ are amplified by Q4 to Q7, Q13 to Q16, Q18 to Q21, and Q23 to Q26, and output by Q8, Q9, Q17, Q22, Q27, and Q28.

It is then rectified by D1, D3, D4, D6, and D7, integrated by C17, C32, C37, and C44 to generate the d.c. voltage.

The output voltage is supplied to the B board via the A board of the unit from CN2.

The power supply of the fan attached to the bracket of the B board is supplied from pin ① of CN3. When the fan stops, the voltage of pin ③ of CN3 becomes 5 V, the protector of the unit operates to turn off the screen. At the same time, the remote LED on the front of the unit blinks 5 times.

#### 3. B BOARD

The 1.48 GHz HD SDI signal input from the BNC terminal is converted to the Y, Pb, and Pr 10-bit parallel signals at the module (HK-102), and input to B board from CN103. The module (HK-102) must first be initialized to operate normally. The signals for initializing are SYIF 0 to 7 of pins ① to ⑧ of CN101, SYSTA 0 and 1 of pins ⑩ and ⑪, SYCS of pins ⑫, STB of pin ⑬, and RESET of pin ⑭. These signals are supplied to the module (HK-102) from CN103. The 10-bit Y signal output from pins ⑧ to ⑫, ⑧ to ⑫ of CN103 are connected to pins ⑤ to ⑨, and ⑥ to ⑩ of IC102.

The 10-bit Pb and Pr signals output from pins ② to ⑥ and ② to ⑥ of CN103 are connected to pins ④ to ⑧, and ⑦ to ⑪ and ⑫ of IC102.

The 74.25 MHz CLK signal output from pin ⑭ of CN103 is connected to pin ③ of IC102. This signal serves as the basic clock of IC102.

IC102 is the PLD (programmable logic device) which loads data from the IC101 ROM and determines the internal circuit.

The VD, FRAME, and HD signals output from pins ⑭, ⑬ to ⑮ of CN103 are connected to pins ③, ④, and ② of IC102. The H SYNC and V SYNC are generated from these signals and output from pins ⑬ and ⑭.

Pins ⑥, ⑧, ⑨, and ⑪ determine the Y, Pb, and Pr signals and H SYNC phase. The signals move to the left of the screen when connected to HIGH (3.3 V).

The Y signal is latched inside IC102 to correct the time, and connected to D/A of IC104 from pins ⑥ to ⑨, and ⑩ to ⑯.

The Pb signal is also latched inside IC102 to correct the time, and connected to D/A of IC106 from pins ⑦ to ⑨, and ⑩ to ⑯ and ⑰.

The Pr signal is also latched inside IC102 to correct the time, and connected to D/A of IC106 from pins ⑩ to ⑫, and ⑬ to ⑮.

The 74.25 MHz clock for the Y signal frequency converted by IC102 is output from pin ⑯. The 37.2 MHz clock for Pb and Pr is connected to D/A from pin ⑯.

IC104 is the D/A for the Y signal. Y signals subjected to D/A are output from pin ⑯. The output level is adjusted by RV101.

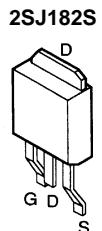
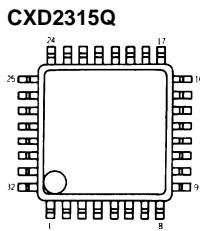
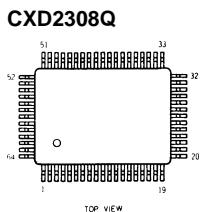
IC106 is the D/A for the Pb and Pr signals. Pb and Pr signals subjected to D/A are output from pins ⑯ and ⑯. The output level of Pb and Pr is adjusted by RV103 and RV102.

The Y signal output from IC104 is passed through the low path filter (FL101), amplified by Q104 and Q105, and connected to the delay line (DL101). After this, they are once again amplified by Q108 and Q109, and output via the buffer (Q110). The Pb and Pr signals subjected to D/A at IC106 are passed through the low pass filter (FL102, and 103), amplified by Q122, Q123, Q117, and Q118, passed through the buffer (Q124, Q119), and output.

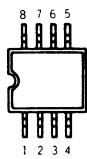
The H SYNC and V SYNC generated at IC102 are passed through the filter and buffer (Q111 to Q114) and output.

## SECTION 4

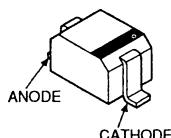
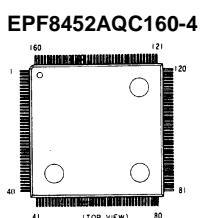
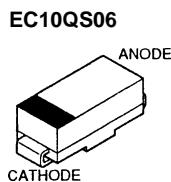
### SEMICONDUCTORS



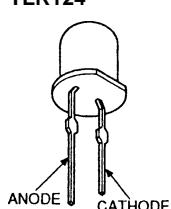
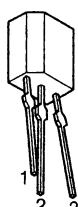
**EPC1064PC8  
TL431CPS**



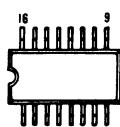
(TOP VIEW)



**LM4040BIM3X-5.0**



**TL1451ACPW**



(TOP VIEW)





## **SECTION 5**

### **EXPLODED VIEWS**

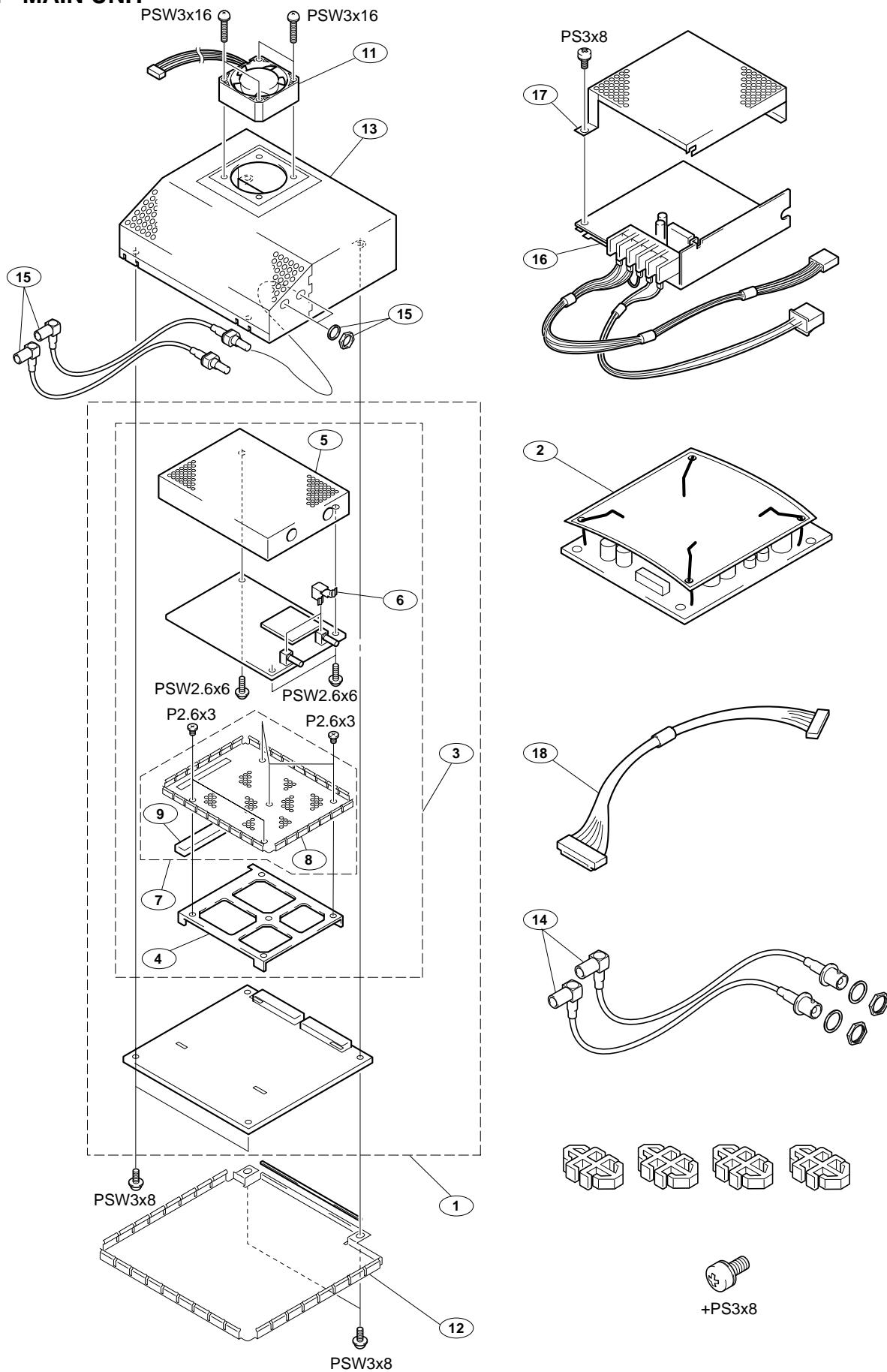
#### **NOTE :**

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked “ \* ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified marked  $\triangle$  are critical for safety.  
Replace only with the part number specified.

Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

## 5-1. MAIN UNIT



REF NO.	PART NO.	DESCRIPTION	REMARK
1	* A-1135-913-A	B COMPLETE PC BOARD	3-9
2	* A-1316-330-A	GC COMPLETE PC BOARD	
3	* A-1482-655-A	BLOCK COMPLETE ASSY, SDI	
4	* 4-060-515-01	STAND, HD SDI SHIELD	
5	* 4-060-517-03	SHIELD (MAIN), HD SDI	
6	* 4-060-510-01	SPRING, EARTH	
7	* 4-060-512-01	SHIELD (ASSY), HD SDI	8, 9
8	* 4-060-518-01	SHIELD (LOWER), HD SDI	
9	* 4-060-513-01	SHIELD, CONNECTOR	
11	* 1-763-038-11	MOTOR, DC FAN	
12	* 4-060-514-03	CASE (UPPER), SHIELD	
13	* 4-060-516-02	CASE (MAIN), SHIELD	
14	1-782-942-11	CABLE ASSY, COAXIAL	
15	1-782-943-11	CABLE ASSY, COAXIAL	
16	△ 1-413-595-12	SWITCHING REGULATOR(FAW05-3RO)	
17	4-039-284-01	COVER	
18	* 1-900-232-48	CONNECTOR ASSY, 8P	



# SECTION 6

## ELECTRICAL PARTS LIST

B

**NOTE :**

The components identified marked  $\triangle$  are critical for safety.  
Replace only with the part number specified.

Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

- Items marked “ \* ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

When indicating parts by reference number, please include the board name.

**RESISTORS**

- All resistors are in ohms
- F : nonflammable

**CAPACITORS**

- PF :  $\mu\mu F$

REF NO.	PART NO.	DESCRIPTION	REMARK	REF NO.	PART NO.	DESCRIPTION	REMARK
	* A-1135-913-A	B COMPLETE PC BOARD	*****	C143	1-163-031-11	CERAMIC CHIP	0.01MF 50V
	C144			C144	1-163-031-11	CERAMIC CHIP	0.01MF 50V
	1-526-652-21	SOCKET, IC DP (8P) (IC101)		C145	1-126-392-11	ELECT CHIP	100MF 20% 6.3V
	* A-1482-655-A	BLOCK COMPLETE ASSY, SDI		C146	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
		<CAPACITOR>		C147	1-163-031-11	CERAMIC CHIP	0.01MF 50V
				C148	1-163-031-11	CERAMIC CHIP	0.01MF 50V
				C149	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C101	1-126-392-11	ELECT CHIP	100MF 20% 6.3V	C150	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C102	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C151	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C103	1-126-392-11	ELECT CHIP	100MF 20% 6.3V	C152	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C104	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C153	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C105	1-126-392-11	ELECT CHIP	100MF 20% 6.3V	C154	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C106	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C160	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C107	1-126-392-11	ELECT CHIP	100MF 20% 6.3V	C161	1-163-031-11	CERAMIC CHIP	0.01MF 50V
C108	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C162	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C109	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C163	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C110	1-126-392-11	ELECT CHIP	100MF 20% 6.3V	C164	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C111	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C165	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C112	1-126-391-11	ELECT CHIP	47MF 20% 6.3V	C166	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C113	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C167	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C114	1-126-391-11	ELECT CHIP	47MF 20% 6.3V	C168	1-163-038-91	CERAMIC CHIP	0.1MF 25V
C115	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C169	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C116	1-164-346-11	CERAMIC CHIP	1MF 16V	C170	1-135-216-11	TANTAL. CHIP	10MF 20% 10V
C117	1-126-391-11	ELECT CHIP	47MF 20% 6.3V	C171	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C118	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C172	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C119	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C173	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C120	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C174	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C122	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C175	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C123	1-163-235-11	CERAMIC CHIP	22PF 5% 50V	C176	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C124	1-163-231-11	CERAMIC CHIP	15PF 5% 50V	C177	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C125	1-163-087-00	CERAMIC CHIP	4PF 0.25PF 50V	C178	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C126	1-163-235-11	CERAMIC CHIP	22PF 5% 50V	C179	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C127	1-163-231-11	CERAMIC CHIP	15PF 5% 50V	C180	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C128	1-163-087-00	CERAMIC CHIP	4PF 0.25PF 50V	C181	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C129	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C182	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C130	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C183	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C131	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C184	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C132	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C185	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C133	1-163-038-91	CERAMIC CHIP	0.1MF 25V	C186	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C134	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C187	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C135	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C188	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C136	1-128-057-11	ELECT	330MF 20% 6.3V	C189	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C139	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C190	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C141	1-163-031-11	CERAMIC CHIP	0.01MF 50V	C191	1-109-982-11	CERAMIC CHIP	1MF 10% 10V
C142	1-126-392-11	ELECT CHIP	100MF 20% 6.3V				

# B

REF NO.	PART NO.	DESCRIPTION	REMARK			REF NO.	PART NO.	DESCRIPTION	REMARK		
C192	1-109-982-11	CERAMIC CHIP	1MF	10%	10V	J1101	1-216-295-91	CONDUCTOR, CHIP (2012)			
C193	1-109-982-11	CERAMIC CHIP	1MF	10%	10V	J1102	1-216-295-91	CONDUCTOR, CHIP (2012)			
C194	1-109-982-11	CERAMIC CHIP	1MF	10%	10V	J1104	1-216-295-91	CONDUCTOR, CHIP (2012)			
C195	1-109-982-11	CERAMIC CHIP	1MF	10%	10V	J1105	1-216-295-91	CONDUCTOR, CHIP (2012)			
C1101	1-135-166-21	TANTAL CHIP	47MF	20%	10V				<COIL>		
									<CONNECTOR>		
CN101	1-573-300-11	CONNECTOR, BOARD TO BOARD 18P				L101	1-410-200-31	INDUCTOR CHIP	4.7μH		
CN102	* 1-764-815-11	CONNECTOR, BOARD TO BOARD 18P				L102	1-408-597-31	INDUCTOR	3.3μH		
CN103	* 1-782-954-11	CONNECTOR, BOARD TO BOARD				L103	1-410-200-31	INDUCTOR CHIP	4.7μH		
									<TRANSISTOR>		
									<DIODE>		
D101	8-719-812-41	DIODE TLR124				Q101	1-801-806-11	TRANSISTOR DTC144EKA-T146			
D1101	8-719-404-49	DIODE MA111-TX				Q102	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
						Q103	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
						Q104	8-729-112-65	TRANSISTOR 2SA1462-Y33			
						Q105	8-729-107-31	TRANSISTOR 2SC3545-T43			
DL101	1-411-830-21	DELAY LINE				Q106	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
						Q107	8-729-216-22	TRANSISTOR 2SA1162-G			
						Q108	8-729-112-65	TRANSISTOR 2SA1462-Y33			
FB101	1-410-396-71	INDUCTOR 0.45μH				Q109	8-729-107-31	TRANSISTOR 2SC3545-T43			
						Q110	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
						Q111	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
						Q112	8-729-216-22	TRANSISTOR 2SA1162-G			
FL101	1-233-606-21	FILTER (SMD), LOW PASS				Q113	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL102	1-233-601-11	FILTER (SMD), LOW PASS				Q114	8-729-216-22	TRANSISTOR 2SA1162-G			
FL103	1-233-601-11	FILTER (SMD), LOW PASS				Q115	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL104	1-233-313-11	FILTER, CHIP EMI				Q116	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL105	1-233-313-11	FILTER, CHIP EMI				Q117	8-729-112-65	TRANSISTOR 2SA1462-Y33			
FL106	1-233-313-11	FILTER, CHIP EMI				Q118	8-729-107-31	TRANSISTOR 2SC3545-T43			
FL107	1-233-313-11	FILTER, CHIP EMI				Q119	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL108	1-233-313-11	FILTER, CHIP EMI				Q120	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL109	1-233-313-11	FILTER, CHIP EMI				Q121	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL110	1-233-313-11	FILTER, CHIP EMI				Q122	8-729-112-65	TRANSISTOR 2SA1462-Y33			
FL111	1-233-313-11	FILTER, CHIP EMI				Q123	8-729-107-31	TRANSISTOR 2SC3545-T43			
FL112	1-233-313-11	FILTER, CHIP EMI				Q124	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL113	1-233-313-11	FILTER, CHIP EMI				Q1101	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
FL115	1-233-313-11	FILTER, CHIP EMI							<RESISTOR>		
FL117	1-233-313-11	FILTER, CHIP EMI									
FL118	1-233-313-11	FILTER, CHIP EMI				R101	1-216-049-91	METAL GLAZE	1K	5%	1/10W
FL119	1-233-313-11	FILTER, CHIP EMI				R102	1-216-049-91	METAL GLAZE	1K	5%	1/10W
FL120	1-233-313-11	FILTER, CHIP EMI				R103	1-216-043-91	METAL GLAZE	560	5%	1/10W
FL121	1-233-313-11	FILTER, CHIP EMI				R104	1-216-049-91	METAL GLAZE	1K	5%	1/10W
FL122	1-233-313-11	FILTER, CHIP EMI				R105	1-216-049-91	METAL GLAZE	1K	5%	1/10W
FL123	1-233-313-11	FILTER, CHIP EMI				R106	1-216-295-11	CONDUCTOR, CHIP (2012)			
FL124	1-233-313-11	FILTER, CHIP EMI				R109	1-216-073-00	METAL GLAZE	10K	5%	1/10W
FL125	1-233-313-11	FILTER, CHIP EMI				R110	1-216-073-00	METAL GLAZE	10K	5%	1/10W
FL126	1-233-313-11	FILTER, CHIP EMI				R111	1-216-049-91	METAL GLAZE	1K	5%	1/10W
FL127	1-233-313-11	FILTER, CHIP EMI				R112	1-216-627-11	METAL CHIP	100	0.50%	1/10W
						R113	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W
						R115	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W
IC101	8-759-534-08	IC EPC1064PC8-HD2				R116	1-216-295-11	CONDUCTOR, CHIP (2012)			
IC102	8-759-466-74	IC EPF8452AQC160-4				R117	1-216-638-11	METAL CHIP	300	0.50%	1/10W
IC104	8-752-375-98	IC CXD2315Q				R118	1-216-049-91	METAL GLAZE	1K	5%	1/10W
IC105	8-759-929-26	IC TL431CPS				R119	1-216-639-11	METAL CHIP	330	0.50%	1/10W
IC106	8-752-357-63	IC CXD2308Q				R120	1-216-025-91	METAL GLAZE	100	5%	1/10W
						R121	1-216-025-91	METAL GLAZE	100	5%	1/10W
						R122	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
JR101	1-216-295-91	CONDUCTOR, CHIP (2012)				R123	1-216-047-91	METAL GLAZE	820	5%	1/10W
JR102	1-216-295-91	CONDUCTOR, CHIP (2012)									

REF NO.	PART NO.	DESCRIPTION	REMARK			REF NO.	PART NO.	DESCRIPTION	REMARK		
R124	1-216-692-11	METAL CHIP	51K	0.50%	1/10W	R190	1-216-001-00	METAL GLAZE	10	5%	1/10W
R125	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R191	1-216-001-00	METAL GLAZE	10	5%	1/10W
R127	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R192	1-216-615-11	METAL CHIP	33	0.50%	1/10W
R128	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R193	1-216-295-11	CONDUCTOR, CHIP (2012)			
R129	1-216-025-91	METAL GLAZE	100	5%	1/10W	R222	1-216-621-11	METAL CHIP	56	0.5%	1/10W
R130	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R223	1-216-001-00	METAL GLAZE	10	5%	1/10W
R131	1-216-639-11	METAL CHIP	330	0.50%	1/10W	R224	1-216-001-00	METAL GLAZE	10	5%	1/10W
R132	1-216-025-91	METAL GLAZE	100	5%	1/10W	R225	1-216-001-00	METAL GLAZE	10	5%	1/10W
R133	1-216-639-11	METAL CHIP	330	0.50%	1/10W	R242	1-216-001-00	METAL GLAZE	10	5%	1/10W
R134	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	R243	1-216-001-00	METAL GLAZE	10	5%	1/10W
R135	1-216-025-91	METAL GLAZE	100	5%	1/10W	R244	1-216-001-00	METAL GLAZE	10	5%	1/10W
R136	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R245	1-216-001-00	METAL GLAZE	10	5%	1/10W
R137	1-216-660-11	METAL CHIP	2.4K	0.50%	1/10W	R246	1-216-013-00	METAL GLAZE	33	5%	1/10W
R138	1-216-645-11	METAL CHIP	560	0.50%	1/10W	R247	1-216-013-00	METAL GLAZE	33	5%	1/10W
R139	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R248	1-216-013-00	METAL GLAZE	33	5%	1/10W
R140	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R249	1-216-013-00	METAL GLAZE	33	5%	1/10W
R141	1-216-017-91	METAL GLAZE	47	5%	1/10W	R250	1-216-013-00	METAL GLAZE	33	5%	1/10W
R142	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	R251	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R143	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R252	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R144	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R253	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R145	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R254	1-216-621-11	METAL CHIP	56	0.5%	1/10W
R146	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	R255	1-216-621-11	METAL CHIP	56	0.5%	1/10W
R147	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	R256	1-216-621-11	METAL CHIP	56	0.5%	1/10W
R148	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R1000	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R149	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R1101	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R150	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R1102	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R151	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	R1103	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R152	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	R1104	1-216-001-00	METAL GLAZE	10	5%	1/10W
R153	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W	R1105	1-216-001-00	METAL GLAZE	10	5%	1/10W
R154	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W	R1106	1-216-001-00	METAL GLAZE	10	5%	1/10W
R155	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W	R1107	1-216-001-00	METAL GLAZE	10	5%	1/10W
R157	1-216-624-11	METAL CHIP	75	0.50%	1/10W	R1108	1-216-001-00	METAL GLAZE	10	5%	1/10W
R158	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R1109	1-216-001-00	METAL GLAZE	10	5%	1/10W
R159	1-216-639-11	METAL CHIP	330	0.50%	1/10W	R1110	1-216-001-00	METAL GLAZE	10	5%	1/10W
R160	1-216-639-11	METAL CHIP	330	0.50%	1/10W	R1111	1-216-001-00	METAL GLAZE	10	5%	1/10W
R161	1-216-025-91	METAL GLAZE	100	5%	1/10W	R1112	1-216-001-00	METAL GLAZE	10	5%	1/10W
R162	1-216-047-91	METAL GLAZE	820	5%	1/10W	R1113	1-216-001-00	METAL GLAZE	10	5%	1/10W
R163	1-216-025-91	METAL GLAZE	100	5%	1/10W	R1114	1-216-001-00	METAL GLAZE	10	5%	1/10W
R164	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R1115	1-216-001-00	METAL GLAZE	10	5%	1/10W
R165	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	R1116	1-216-001-00	METAL GLAZE	10	5%	1/10W
R166	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R1117	1-216-001-00	METAL GLAZE	10	5%	1/10W
R167	1-216-645-11	METAL CHIP	560	0.50%	1/10W	R1118	1-216-001-00	METAL GLAZE	10	5%	1/10W
R169	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R1119	1-216-001-00	METAL GLAZE	10	5%	1/10W
R170	1-216-025-91	METAL GLAZE	100	5%	1/10W	R1120	1-216-001-00	METAL GLAZE	10	5%	1/10W
R171	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	R1121	1-216-001-00	METAL GLAZE	10	5%	1/10W
R172	1-216-624-11	METAL CHIP	75	0.50%	1/10W	R1122	1-216-001-00	METAL GLAZE	10	5%	1/10W
R173	1-216-049-91	METAL GLAZE	1K	5%	1/10W	R1123	1-216-001-00	METAL GLAZE	10	5%	1/10W
R174	1-216-639-11	METAL CHIP	330	0.50%	1/10W	R1124	1-216-001-00	METAL GLAZE	10	5%	1/10W
R175	1-216-639-11	METAL CHIP	330	0.50%	1/10W	R1125	1-216-001-00	METAL GLAZE	10	5%	1/10W
R176	1-216-025-91	METAL GLAZE	100	5%	1/10W	R1126	1-216-001-00	METAL GLAZE	10	5%	1/10W
R177	1-216-047-91	METAL GLAZE	820	5%	1/10W	R1127	1-216-001-00	METAL GLAZE	10	5%	1/10W
R178	1-216-025-91	METAL GLAZE	100	5%	1/10W	R1128	1-216-001-00	METAL GLAZE	10	5%	1/10W
R179	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R1129	1-216-001-00	METAL GLAZE	10	5%	1/10W
R180	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	R1130	1-216-001-00	METAL GLAZE	10	5%	1/10W
R181	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	R1131	1-216-001-00	METAL GLAZE	10	5%	1/10W
R183	1-216-645-11	METAL CHIP	560	0.50%	1/10W	R1132	1-216-001-00	METAL GLAZE	10	5%	1/10W
R184	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	R1133	1-216-001-00	METAL GLAZE	10	5%	1/10W
R185	1-216-025-91	METAL GLAZE	100	5%	1/10W	R1134	1-216-001-00	METAL GLAZE	10	5%	1/10W
R186	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W						

REF NO.	PART NO.	DESCRIPTION	REMARK			REF NO.	PART NO.	DESCRIPTION	REMARK		
R1135	1-216-001-00	METAL GLAZE	10	5%	1/10W	C36	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
R1136	1-216-001-00	METAL GLAZE	10	5%	1/10W	C37	1-107-872-11	ELECT	3300MF	20%	6.3V
R1137	1-216-001-00	METAL GLAZE	10	5%	1/10W	C38	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
R1138	1-216-001-00	METAL GLAZE	10	5%	1/10W	C39	1-107-876-11	ELECT	330MF	20%	6.3V
R1139	1-216-001-00	METAL GLAZE	10	5%	1/10W	C40	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
R1140	1-216-001-00	METAL GLAZE	10	5%	1/10W	C42	1-126-396-11	ELECT	47MF	20%	16V
R1141	1-216-001-00	METAL GLAZE	10	5%	1/10W	C43	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
R1142	1-216-001-00	METAL GLAZE	10	5%	1/10W	C44	1-126-928-11	ELECT	3300MF	20%	10V
R1143	1-216-001-00	METAL GLAZE	10	5%	1/10W	C45	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
R1144	1-216-001-00	METAL GLAZE	10	5%	1/10W	C46	1-107-876-11	ELECT	330MF	20%	6.3V
R1145	1-216-001-00	METAL GLAZE	10	5%	1/10W	C47	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
R1146	1-216-001-00	METAL GLAZE	10	5%	1/10W	C48	1-126-916-11	ELECT	1000MF	20%	6.3V
R1147	1-216-001-00	METAL GLAZE	10	5%	1/10W	C49	1-107-876-11	ELECT	330MF	20%	6.3V
R1148	1-216-001-00	METAL GLAZE	10	5%	1/10W	C50	1-107-876-11	ELECT	330MF	20%	6.3V
R1149	1-216-001-00	METAL GLAZE	10	5%	1/10W	C51	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
						C52	1-163-031-11	CERAMIC CHIP	0.01MF	50V	
<VARIABLE RESISTOR>						<CONNECTOR>					
RV101	1-238-801-11	RES, ADJ, CERMET 5K				CN1	* 1-564-507-11	PLUG, CONNECTOR 4P			
RV102	1-238-801-11	RES, ADJ, CERMET 5K				CN2	* 1-564-511-61	PLUG, CONNECTOR 8P			
RV103	1-238-801-11	RES, ADJ, CERMET 5K				CN3	* 1-564-506-11	PLUG, CONNECTOR 3P			
*****											
* A-1316-330-A GC COMPLETE PC BOARD						<DIODE>					
*****						D1	8-719-210-43	DIODE EC10QS06-TE12L			
<CAPACITOR>						D2	8-759-274-67	IC LM4040BIM3-5.0			
C1	1-107-872-11	ELECT	3300MF	20%	6.3V	D3	8-719-059-22	DIODE NSQ03A06-TE16L			
C2	1-163-031-11	CERAMIC CHIP	0.01MF	50V		D4	8-719-059-22	DIODE NSQ03A06-TE16L			
C3	1-126-391-11	ELECT CHIP	47MF	20%	6.3V	D5	8-759-274-67	IC LM4040BIM3-5.0			
C4	1-126-394-11	ELECT CHIP	10MF	20%	16V	D6	8-719-059-22	DIODE NSQ03A06-TE16L			
C5	1-163-038-91	CERAMIC CHIP	0.1MF		25V	D7	8-719-059-22	DIODE NSQ03A06-TE16L			
C7	1-126-391-11	ELECT CHIP	47MF	20%	6.3V	D8	8-719-158-20	DIODE RD6.2SB1			
C8	1-163-131-00	CERAMIC CHIP	390PF	5%	50V	D9	8-719-158-20	DIODE RD6.2SB1			
C9	1-104-563-11	FILM CHIP	0.1MF	5%	16V	D10	8-719-158-20	DIODE RD6.2SB1			
C10	1-163-251-11	CERAMIC CHIP	100PF	5%	50V	D11	8-719-158-20	DIODE RD6.2SB1			
C11	1-104-555-11	FILM CHIP	0.022MF	5%	16V	D12	8-719-404-49	DIODE MA111			
<FERRITE BEAD>						<IC>					
C12	1-163-031-11	CERAMIC CHIP	0.01MF		50V	FB1	1-410-396-41	FERRITE BEAD INDUCTOR 0.45μH			
C13	1-126-394-11	ELECT CHIP	10MF	20%	16V	FB2	1-410-396-41	FERRITE BEAD INDUCTOR 0.45μH			
C14	1-126-391-11	ELECT CHIP	47MF	20%	6.3V	FB3	1-410-396-41	FERRITE BEAD INDUCTOR 0.45μH			
C15	1-163-031-11	CERAMIC CHIP	0.01MF		50V	FB4	1-410-396-41	FERRITE BEAD INDUCTOR 0.45μH			
C16	1-126-924-11	ELECT	330MF	20%	6.3V						
C17	1-107-872-11	ELECT	3300MF	20%	6.3V	IC1	8-759-929-26	IC TL431CPS			
C18	1-163-038-91	CERAMIC CHIP	0.1MF		25V	IC2	8-759-260-57	IC TL1451ACPW-E05			
C19	1-126-394-11	ELECT CHIP	10MF	20%	16V	IC3	8-759-260-57	IC TL1451ACPW-E05			
C21	1-126-391-11	ELECT CHIP	47MF	20%	6.3V	IC4	8-759-929-26	IC TL431CPS			
C22	1-163-131-00	CERAMIC CHIP	390PF	5%	50V						
C23	1-104-551-11	FILM CHIP	0.01MF	5%	16V	<COIL>					
C24	1-163-251-11	CERAMIC CHIP	100PF	5%	50V	L1	1-412-525-31	INDUCTOR	10μH		
C25	1-104-555-11	FILM CHIP	0.022MF	5%	16V	L2	1-414-700-11	INDUCTOR	47μH		
C26	1-163-031-11	CERAMIC CHIP	0.01MF		50V	L3	1-414-700-11	INDUCTOR	47μH		
C27	1-126-391-11	ELECT CHIP	47MF	20%	6.3V	L4	1-414-700-11	INDUCTOR	47μH		
C28	1-126-394-11	ELECT CHIP	10MF	20%	16V	L5	1-414-700-11	INDUCTOR	47μH		
C30	1-126-396-11	ELECT CHIP	47MF	20%	16V	L6	1-414-700-11	INDUCTOR	47μH		
C31	1-126-396-11	ELECT CHIP	47MF	20%	16V	L7	1-414-700-11	INDUCTOR	47μH		
C32	1-107-876-11	ELECT	330MF	20%	6.3V	L8	1-414-700-11	INDUCTOR	47μH		
C33	1-163-031-11	CERAMIC CHIP	0.01MF		50V	L9	1-412-549-31	INDUCTOR	1μH		
C34	1-107-876-11	ELECT	330MF	20%	6.3V	L10	1-414-700-11	INDUCTOR	47μH		

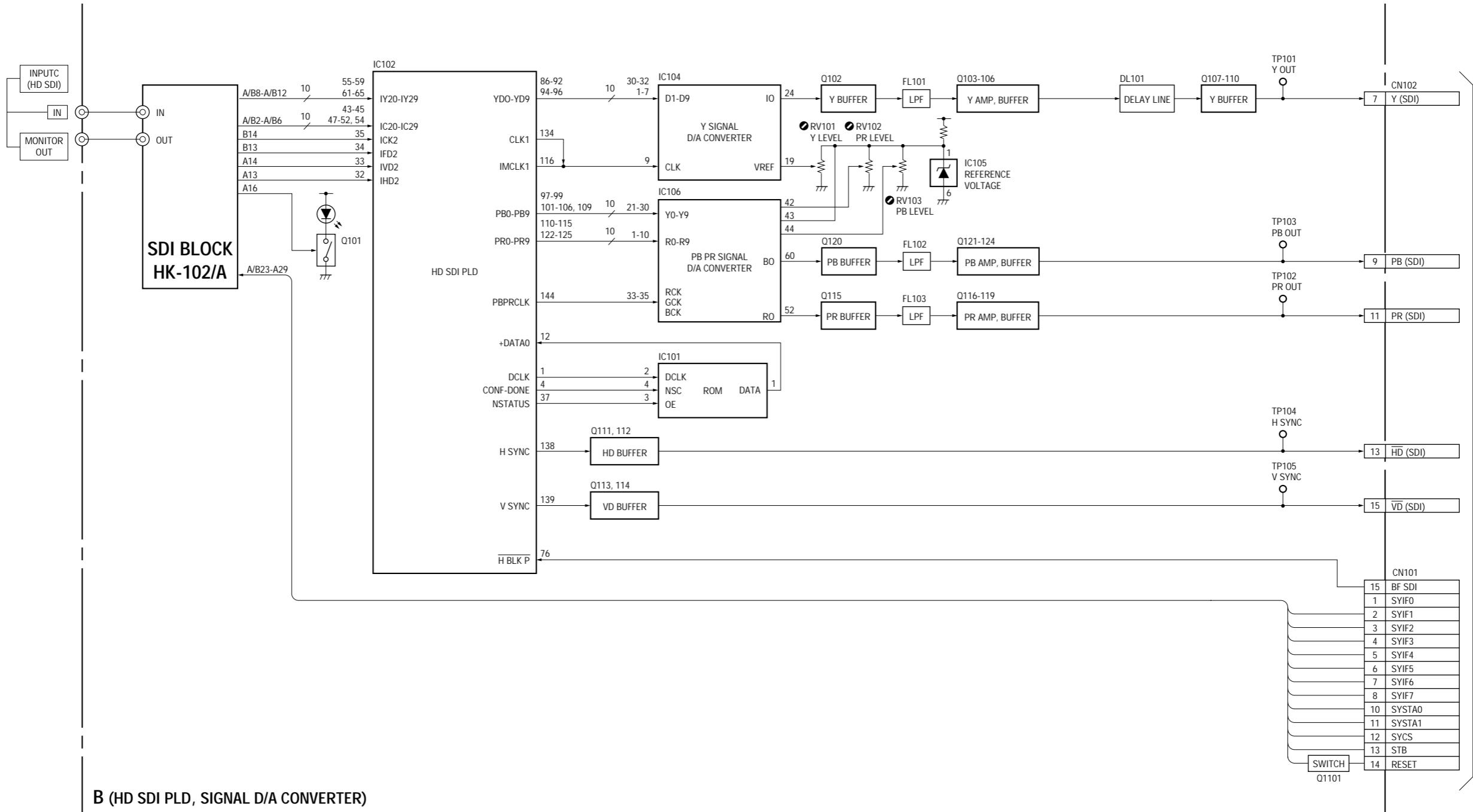
REF NO.	PART NO.	DESCRIPTION	REMARK	REF NO.	PART NO.	DESCRIPTION	REMARK
L11	1-406-666-21	COIL, CHoke	150μH <TRANSISTOR>	R26	1-216-685-11	METAL CHIP	27K 0.50% 1/10W
				R27	1-216-101-00	METAL GLAZE	150K 5% 1/10W
				R28	1-216-639-11	METAL CHIP	330 0.50% 1/10W
				R29	1-216-089-91	METAL GLAZE	47K 5% 1/10W
				R30	1-216-645-11	METAL CHIP	560 0.50% 1/10W
Q1	1-801-806-11	TRANSISTOR DTC144EKA-T146		R31	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
Q2	1-801-806-11	TRANSISTOR DTC144EKA-T146		R32	1-216-675-11	METAL CHIP	10K 0.50% 1/10W
Q3	1-801-806-11	TRANSISTOR DTC144EKA-T146		R34	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
Q4	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R35	1-216-669-11	METAL CHIP	5.6K 0.50% 1/10W
Q5	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R36	1-216-663-11	METAL CHIP	3.3K 0.50% 1/10W
Q6	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R37	1-216-669-11	METAL CHIP	5.6K 0.50% 1/10W
Q7	8-729-216-22	TRANSISTOR 2SA1162-G		R38	1-216-065-91	METAL GLAZE	4.7K 5% 1/10W
Q8	8-729-322-45	TRANSISTOR 2SJ182S		R39	1-216-065-91	METAL GLAZE	4.7K 5% 1/10W
Q9	8-729-322-45	TRANSISTOR 2SJ182S		R40	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
Q10	1-801-806-11	TRANSISTOR DTC144EKA-T146		R41	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
Q11	1-801-806-11	TRANSISTOR DTC144EKA-T146		R42	1-216-065-91	METAL GLAZE	4.7K 5% 1/10W
Q12	1-801-806-11	TRANSISTOR DTC144EKA-T146		R43	1-216-065-91	METAL GLAZE	4.7K 5% 1/10W
Q13	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R44	1-216-009-00	METAL GLAZE	22 5% 1/10W
Q14	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R45	1-216-009-00	METAL GLAZE	22 5% 1/10W
Q15	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R46	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
Q16	8-729-216-22	TRANSISTOR 2SA1162-G		R47	1-216-669-11	METAL CHIP	5.6K 0.50% 1/10W
Q17	8-729-322-45	TRANSISTOR 2SJ182S		R48	1-216-671-11	METAL CHIP	6.8K 0.50% 1/10W
Q18	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R49	1-216-683-11	METAL CHIP	22K 0.50% 1/10W
Q19	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R50	1-216-065-91	METAL GLAZE	4.7K 5% 1/10W
Q20	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R51	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
Q21	8-729-216-22	TRANSISTOR 2SA1162-G		R52	1-216-065-91	METAL GLAZE	4.7K 5% 1/10W
Q22	8-729-322-45	TRANSISTOR 2SJ182S		R53	1-216-009-00	METAL GLAZE	22 5% 1/10W
Q23	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R54	1-216-009-00	METAL GLAZE	22 5% 1/10W
Q24	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R55	1-216-097-91	METAL GLAZE	100K 5% 1/10W
Q26	8-729-216-22	TRANSISTOR 2SA1162-G					*****
Q27	8-729-322-45	TRANSISTOR 2SJ182S					*****
Q28	8-729-322-45	TRANSISTOR 2SJ182S					*****
			<RESISTOR>				MISCELLANEOUS
							*****
R1	1-216-073-00	METAL GLAZE	10K 5% 1/10W		1-782-942-11	CABLE ASSY, COAXIAL	
R2	1-216-049-91	METAL GLAZE	1K 5% 1/10W		* 1-900-232-48	CONNECTOR ASSY, MICRO 8P	
R3	1-216-093-00	METAL GLAZE	68K 5% 1/10W		1-763-038-11	MOTOR, DC FAN	
R4	1-216-651-11	METAL CHIP	1K 0.50% 1/10W		1-782-943-11	CABLE ASSY, COAXIAL	
R5	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	▲	1-413-595-12	SWITCHING REGULATOR (FAW05-3RO)	
R6	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W				*****
R7	1-216-651-11	METAL CHIP	1K 0.50% 1/10W				*****
R8	1-216-099-00	METAL GLAZE	120K 5% 1/10W				ACCESSORY & RACKING METERIALS
R9	1-216-685-11	METAL CHIP	27K 0.50% 1/10W				*****
R10	1-216-665-11	METAL CHIP	3.9K 0.50% 1/10W				
R11	1-216-089-91	METAL GLAZE	47K 5% 1/10W		3-861-132-02	INSTRUCTIONS, OPERATING (Japanese/English)	
R12	1-216-627-11	METAL CHIP	100 0.50% 1/10W		3-861-133-02	INSTALLATION MANUAL FOR DEALER (Japanese/English)	
R13	1-216-675-11	METAL CHIP	10K 0.50% 1/10W		* 4-061-403-01	INDIVIDUAL CARTON	
R14	1-216-651-11	METAL CHIP	1K 0.50% 1/10W				
R15	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R16	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W				
R17	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R18	1-216-009-00	METAL GLAZE	22 5% 1/10W				
R19	1-216-009-00	METAL GLAZE	22 5% 1/10W				
R20	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R21	1-216-093-00	METAL GLAZE	68K 5% 1/10W				
R22	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W				
R23	1-216-651-11	METAL CHIP	1K 0.50% 1/10W				
R24	1-216-651-11	METAL CHIP	1K 0.50% 1/10W				
R25	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W				



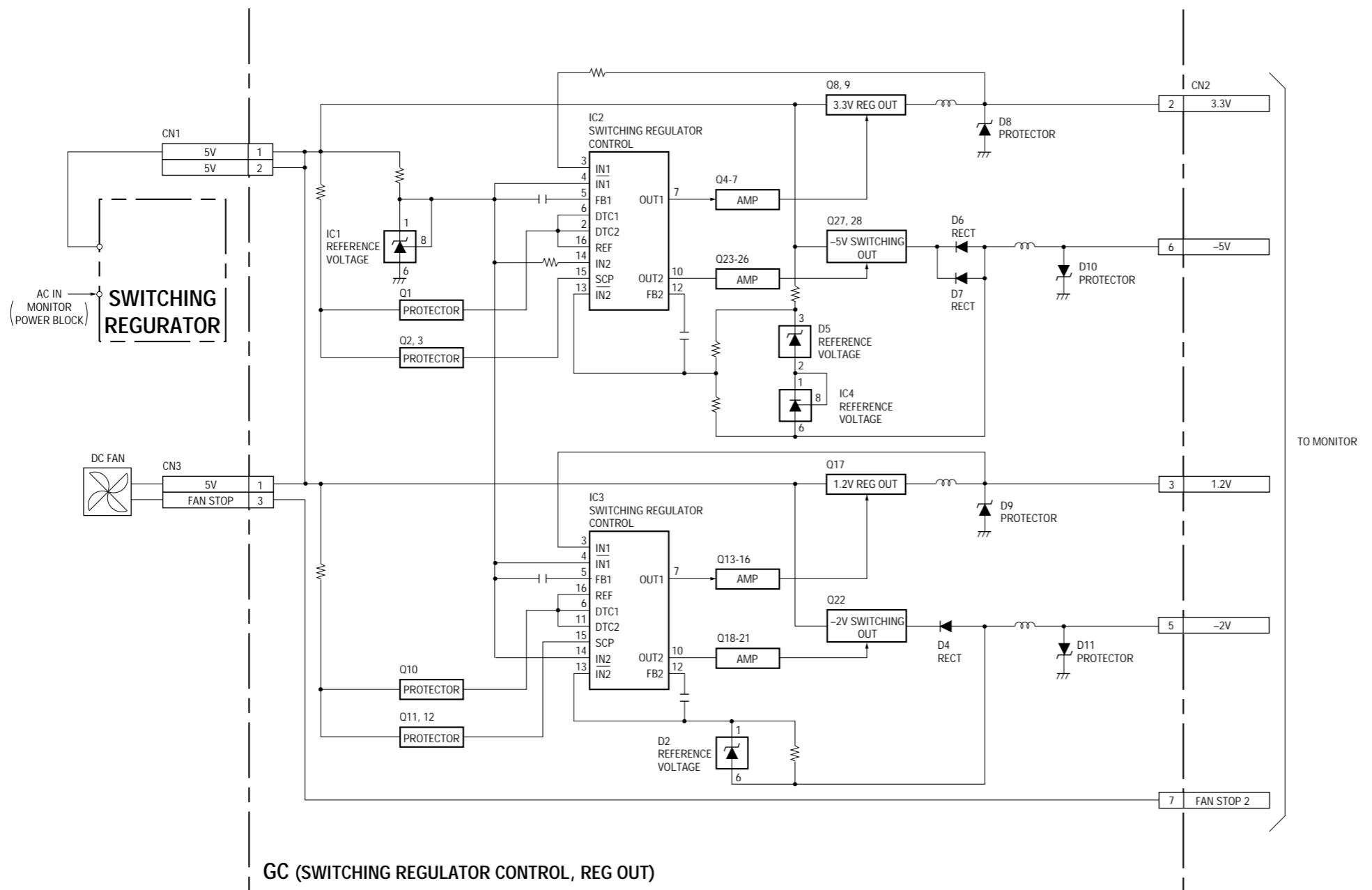
## SECTION 7

### BLOCK DIAGRAMS

#### 7-1. B BLOCK DIAGRAM



## 7-2. GC BLOCK DIAGRAM



## SECTION 8

### DIAGRAMS

#### 8-1. PRINTED WIRING BOARDS/SCHEMATIC DIAGRAMS

##### Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$  50WV or less are not indicated except for electrolytics.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5 mm  
Rating electrical power 1/4W

- All resistors are in ohms. (1M: 1000 $\text{k}\Omega$ , 1k: 1000 $\Omega$ )
- Chip resistor are 1/10W unless otherwise noted.
- : panel designation and adjustment repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- METAL CHIP (:RN, :RN-CP) resistor in 1%, 0.5%, 1/4W unless otherwise specified.
- All voltages are in V.
- Reading are taken with Hivision color-bar signal (R.G.B SYNC) input.
- Voltage are dc with respect to ground unless otherwise noted.
- Reading are taken with attach the PHM-20M8U monitor.
- Voltage variation may be noted due to normal production tolerance.
- : B+,  
 : B-line
- : signal path
- Circled numbers are waveforms reference.

##### Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RW	NONFLAMMABLE WIREWOUND
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

The components identified marked are critical for safety.  
Replace only with the part number specified.

Les composants identifiés par une marque sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

**B**

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B  
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1-667-042-14

D101 B-4  
D1101 B-1

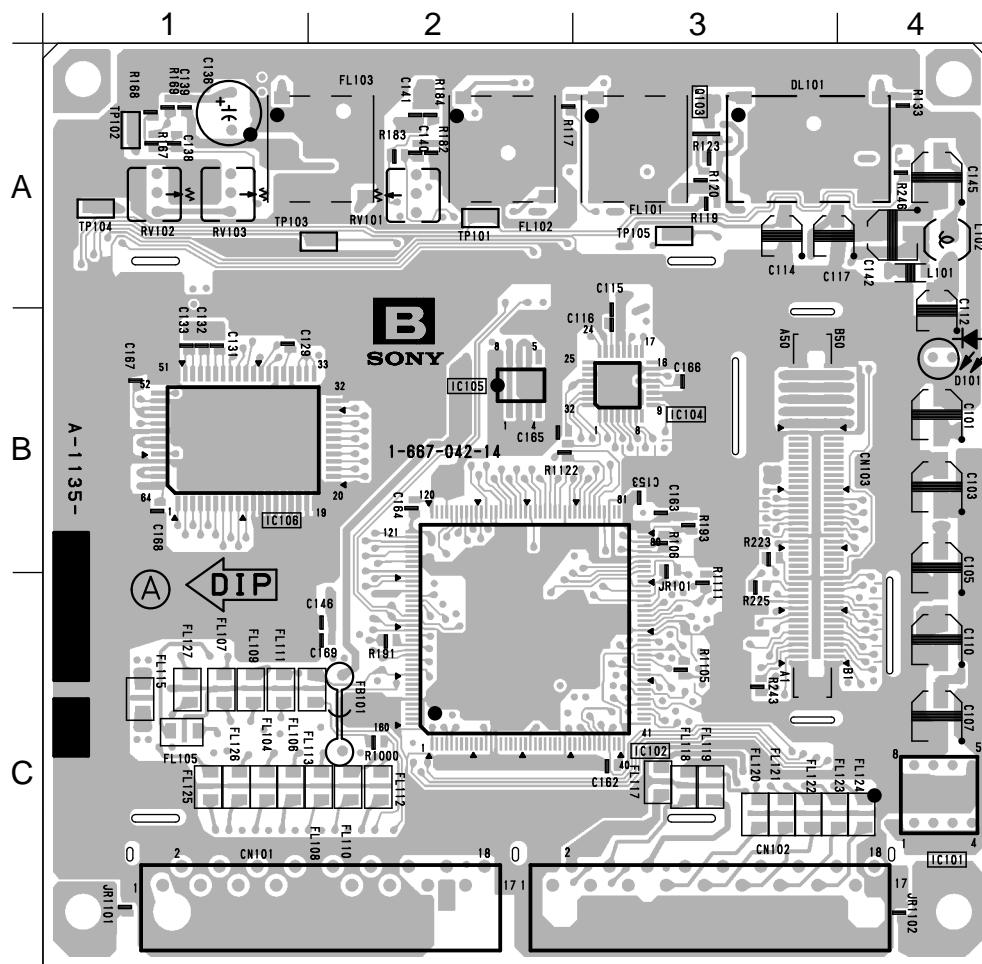
IC101 C-4  
IC102 C-2  
IC104 B-3  
IC105 B-2  
IC106 B-1

Q101 \* B-1  
Q102 \* B-2  
Q103 A-3  
Q104 \* A-2  
Q105 \* A-1  
Q106 \* A-1  
Q107 \* A-1  
Q108 \* A-1  
Q109 \* A-1  
Q110 \* A-1  
Q111 \* A-2  
Q112 \* A-2  
Q113 \* A-2  
Q114 \* A-2  
Q115 \* A-3  
Q116 \* A-3  
Q117 \* A-3  
Q118 \* A-3  
Q119 \* A-4  
Q120 \* A-2  
Q121 \* A-3  
Q122 \* A-2  
Q123 \* B-3  
Q124 \* A-3  
Q1101 C-3

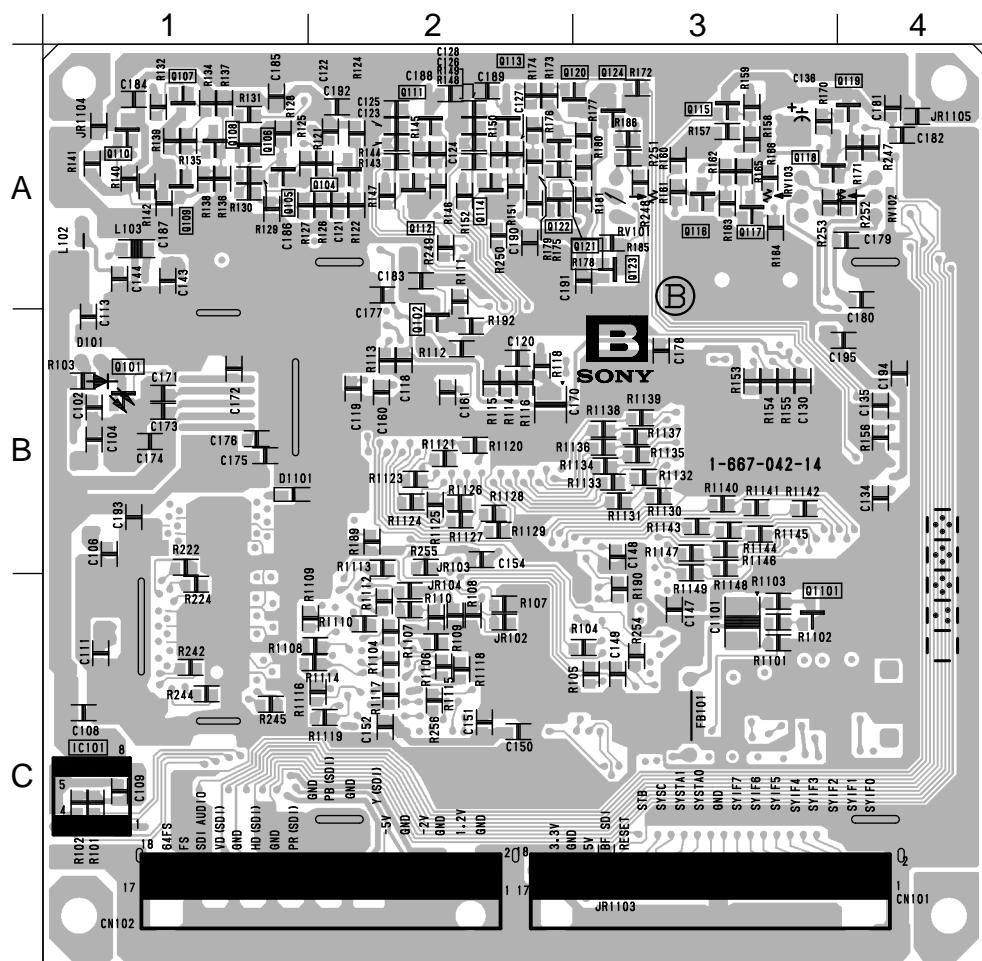
RV101 A-2  
RV102 A-1  
RV103 A-1

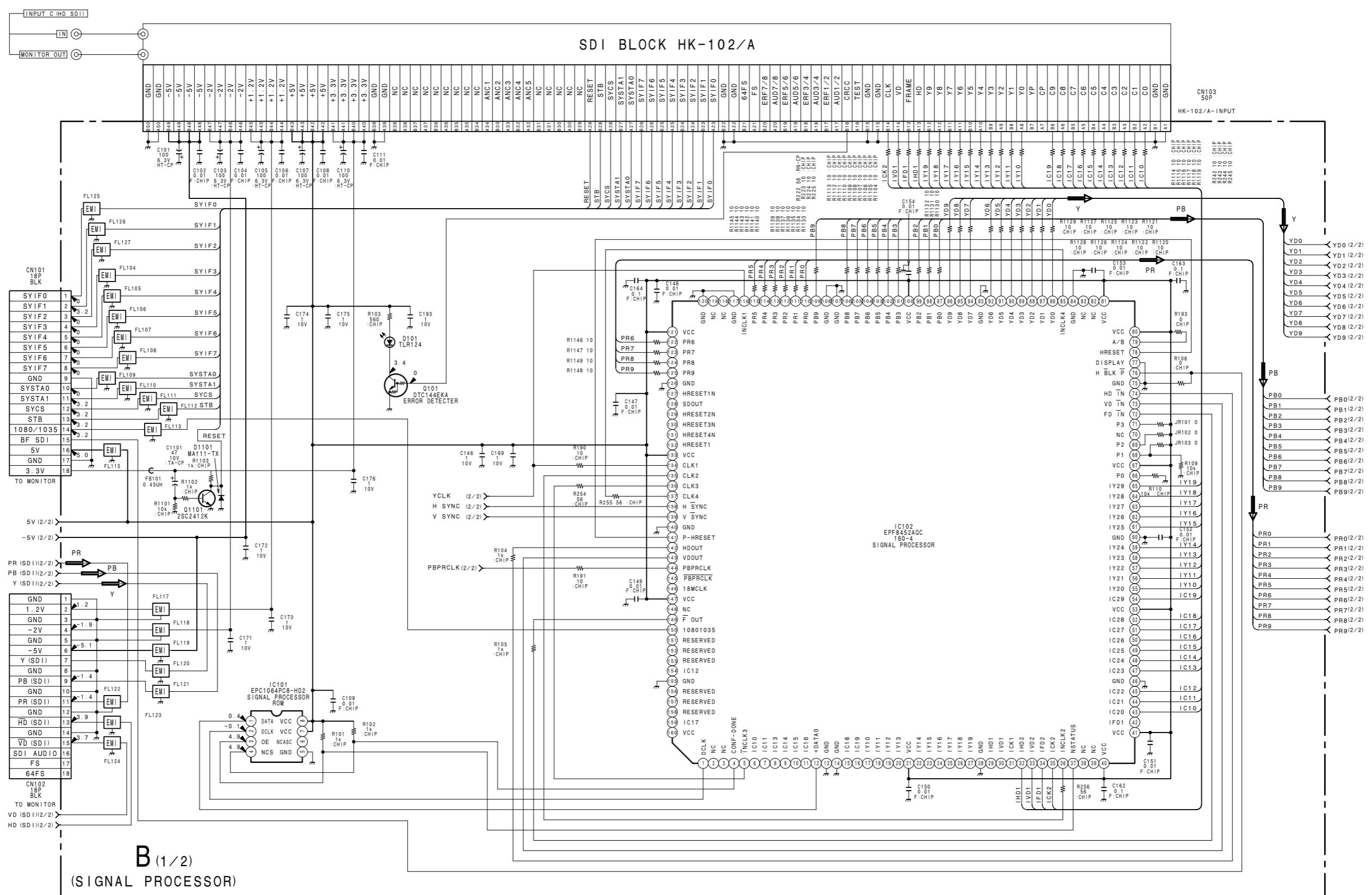
TP101 A-2  
TP102 A-1  
TP103 A-2  
TP104 A-1  
TP105 A-3

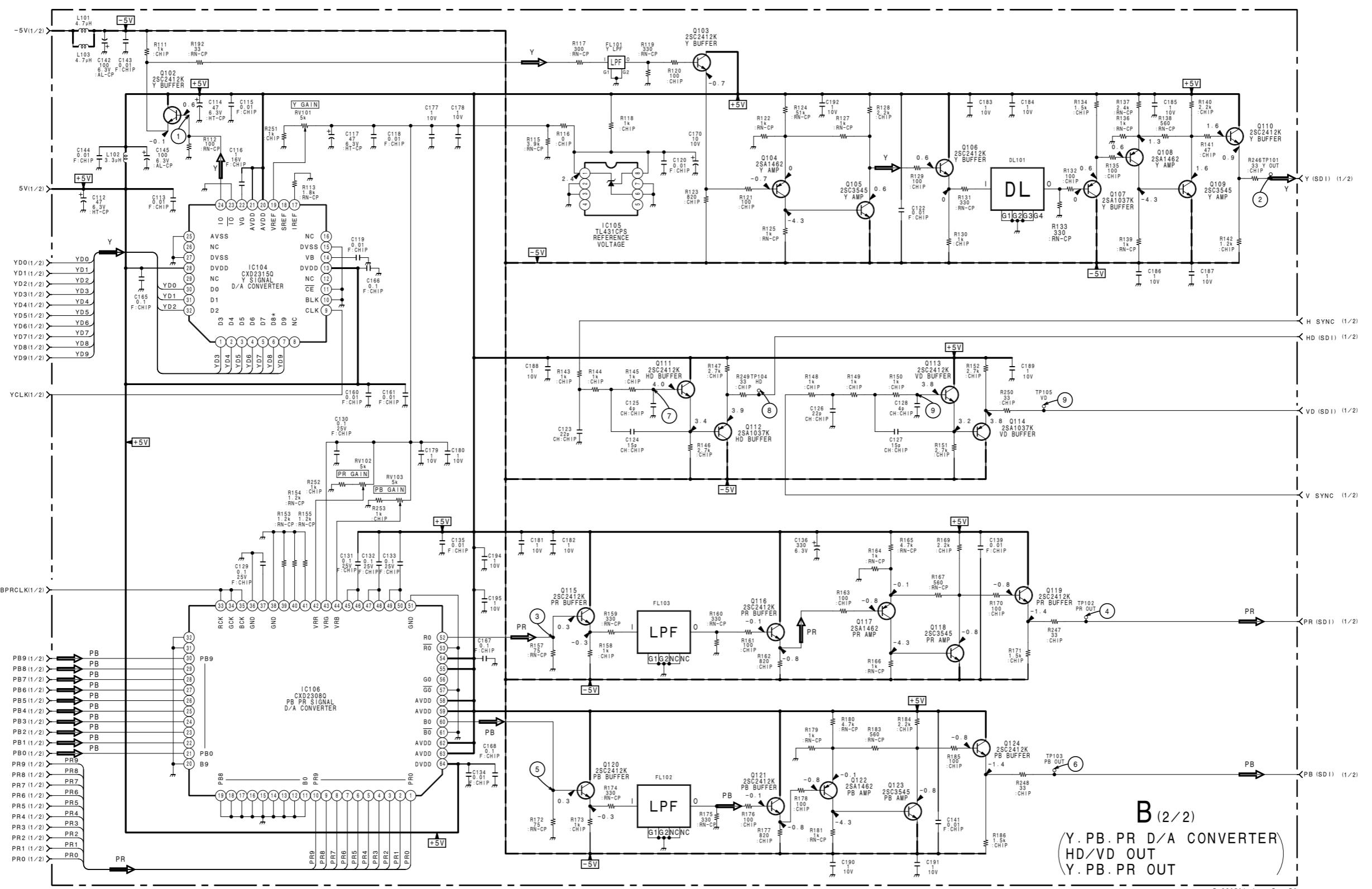
\* : B Side mount

**B -A SIDE-**

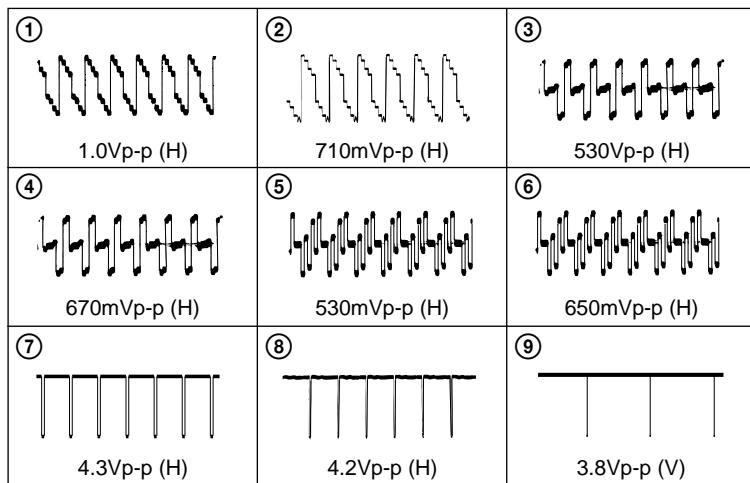
1-667-042-14





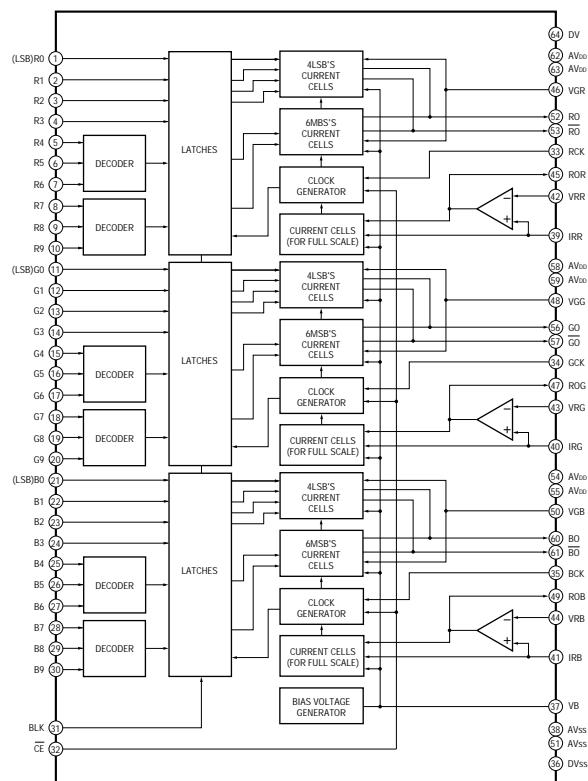


## B Board Waveforms

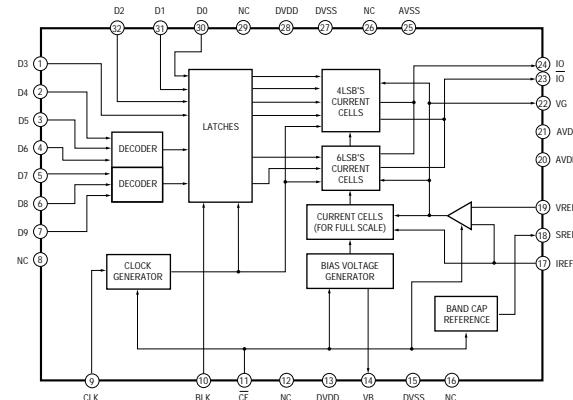


## B Board IC Block Diagrams

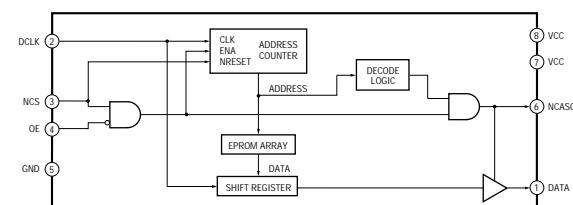
**CXD2308Q (IC106)**



**CXD2315Q (IC104)**



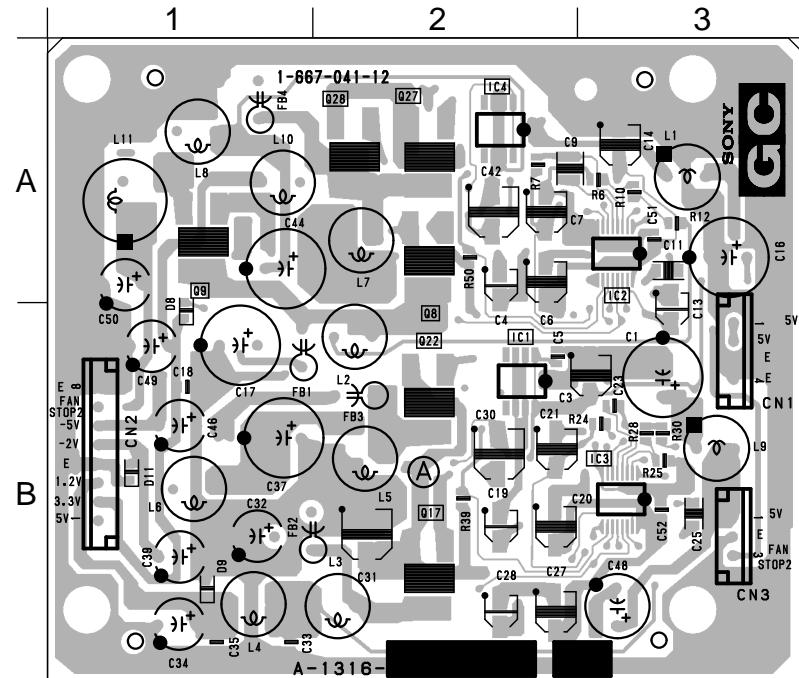
**EPC1064PC8 (IC101)**



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1-667-041-12

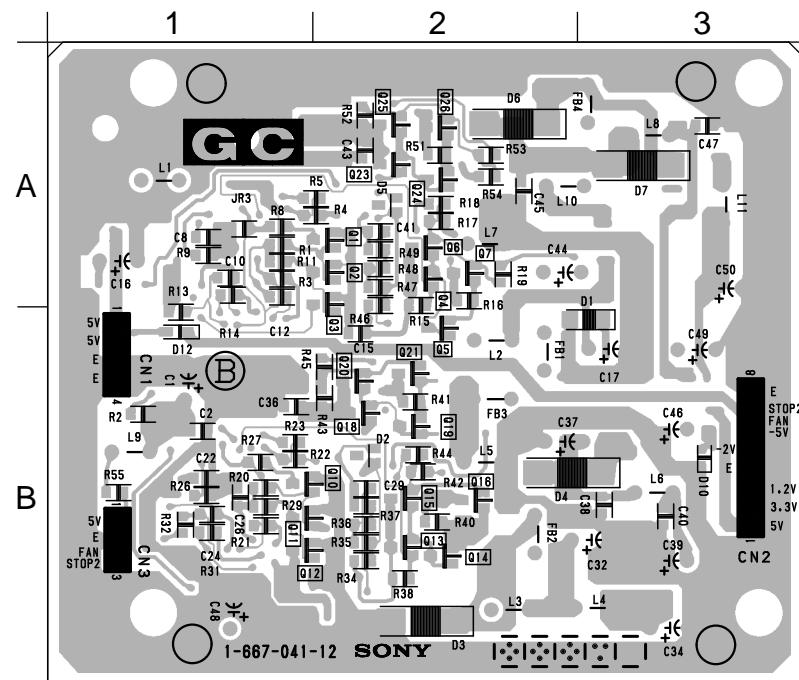
D1 \* B-3  
D2 \* B-2  
D3 \* B-3  
D4 \* B-3  
D5 \* A-2  
D6 \* A-2  
D7 \* A-3  
D8 B-1  
D9 B-1  
D10 \* C-3  
D11 B-1  
D12 \* B-1  
  
IC1 B-2  
IC2 A-3  
IC3 B-3  
IC4 A-2  
  
Q1 \* A-2  
Q2 \* A-2  
Q3 \* A-2  
Q4 \* A-2  
Q5 \* B-2  
Q6 \* A-2  
Q7 \* A-2  
Q8 A-2  
Q9 A-1  
Q10 \* B-2  
Q11 \* B-2  
Q12 \* B-2  
Q13 \* B-2  
Q14 \* B-2  
Q15 \* B-2  
Q16 \* B-2  
Q17 B-2  
Q18 \* B-2  
Q19 \* B-2  
Q20 \* B-2  
Q21 \* B-2  
Q22 B-2  
Q23 \* A-2  
Q24 \* A-2  
Q25 \* A-2  
Q26 \* A-2  
Q27 A-2  
Q28 A-2

\*:B Side mount



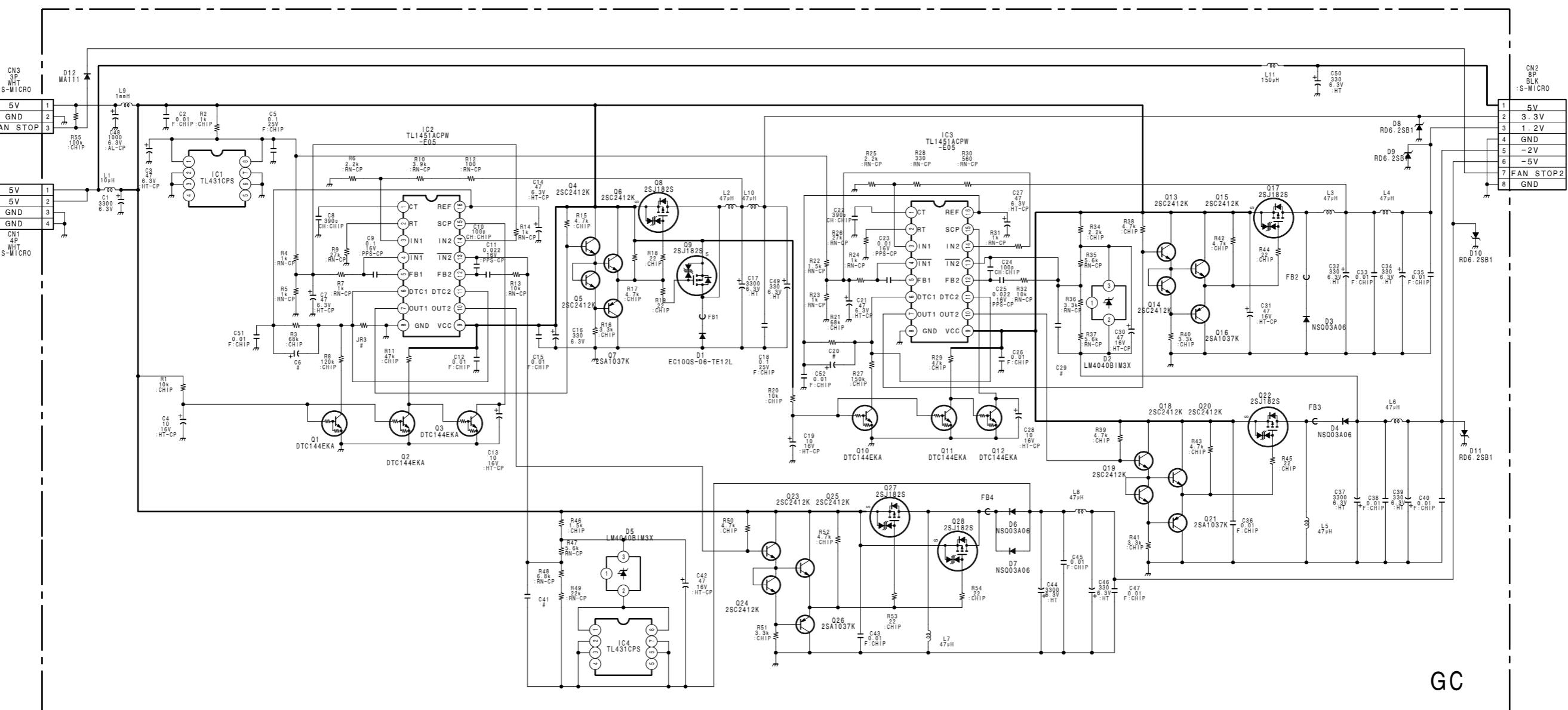
**GC -A SIDE-**

1-667-041-12



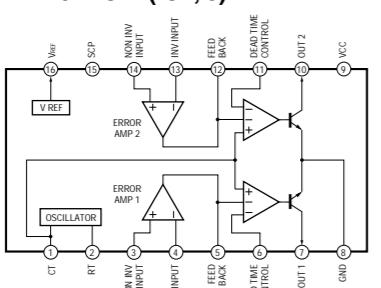
**GC -B SIDE-**

1-667-041-12



GC Board IC Block Diagram

TL1451ACW (IC2, 3)



The components identified marked  are critical for safety.  
Replace only with the part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.



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